Enclosure 1

DRAFT REPORT

Phase II Archaeological Investigations of an Excavated Pit Complex, Site 23621, at Pohakuloa Training Area, Hawai'i Island, Hawai'i

TMK (3) 4-04-016

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Abstract

This report documents a targeted survey of features of a previously known archaeological site on an existing range that is to be revitalized through new construction and subsequently used for new firing exercises. This project took place at the Pohakuloa Training Area at the base of Mauna Kea in Ka'ohe *ahupua'a*, Hāmākua District, Hawai'i Island (Figure 1). The parcel is in TMK (3) 4-04-016. The area that was covered for this project is 0.14 hectares on the southeast side of Pu'u Menehune and west of Red Leg Trail. This parcel is controlled by the US Army as part of the Pohakuloa Training Area. Seventeen previously documented clusters of pits, recorded as features of Site 23621, were revisited to record the number of pits in each feature, area of the feature, and gather information about the pits. Two additional pit clusters were identified in transit from on previously identified cluster to another. These latter two clusters were added to Site 23621 as additional features. While it is clear from the documented features that something was sought beneath the pāhoehoe, there is no affirmative evidence to support any of several proposed hypotheses.

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Introduction

This report documents a targeted survey of features of a previously known archaeological site on an existing range that is to be revitalized through new construction and subsequently used for new firing exercises. This project took place at the Pohakuloa Training Area at the base of Mauna Kea in Ka'ohe *ahupua'a*, Hāmākua District, Hawai'i Island (Figure 1). The parcel is in TMK (3) 4-04-016. The area that was covered for this project is 0.14 hectares on the southeast side of Pu'u Menehune and west of Red Leg Trail. This parcel is controlled by the US Army as part of the Pohakuloa Training Area. The background discussion focuses on the Saddle region, or *'Aina Mauna*, because this area has a unique environment on the island due to the elevation and the influence of the mountains on the local weather. PTA is well within this environmental zone, and the entire project area falls within it. Other portions of Ka'ohe Ahupua'a do not share the same environmental conditions, and this has influenced the types of archaeological sites found in the two regions.

Background

The project area averages about 5500 ft. above sea level. It is located about 41 km from both the North Kona coast to the northwest and the Hāmākua coast to the northeast. The area consists of a combination of 'a'ā and pāhoehoe lava flows. The physical remains examined were found entirely on pāhoehoe flows, but in some cases these were small areas of pāhoehoe surrounded by 'a'ā. The landscape is undulating, with several deep trenches and numerous 'a'ā berms or ridges. The biotic communities in the area have been classified as barren lava, *Myoporum* shrubland, *Myoporum-Chamaesyce* treeland, and sparse *Metrosideros* treeland on the southern and eastern margins (Shaw & Castillo 1997). Most of the areas containing excavated pits were bare of vegetation, or had only small plants. A few of the pit clusters were located among trees. The lava flows are all Ka'u Basalt from the Mauna Loa volcano, the k4 flow dated to 200-750 B.P. The pāhoehoe in the area of the pits was generally well weatheredWith a few exceptions noted in the discussion below, very little soil was present in the project area, and most of the excavated pits did not contain visible soil. The climate is dry and cool, with average annual temperatures ranging between 50°F and 60°F, with minimum temperatures between 30°F and 40°F. There are no permanent streams in the project area.

Previous archaeological research at the Pohakuloa Training Area (PTA) has identified trails, volcanic glass extraction sites, evidence of past human use and modification of lava tubes, some habitation sites, stone cairns (*ahu*), shrines, and excavated pits. Historic era sites such as walls and historic camp sites have also been identified in the vicinity. The mountain region (*'Aina Mauna*) of Hawai'i Island was imbued by Hawaiians with sacredness. Mauna Kea is represented in genealogies and *mele* as the child of Wakea and Papa, or the *piko* (umbilical chord) of the child Hawai'i Island (Maly & Maly 2005). Legends relate stories of supernatural beings living on the mountain. Oral histories of the island include accounts of people traversing the region, often warriors in times of warfare. The high chief 'Umi was said to have resided in the region following his consolidation of the island under his rule, and built *heiau* in the area between the mountains (Kamakau 1992). Kamehameha I traveled to Mauna Loa and Mauna Kea to make offerings upon inheriting the god Kūkā'ilimoku from Kalani'ōpu'u, and others traveled through the area

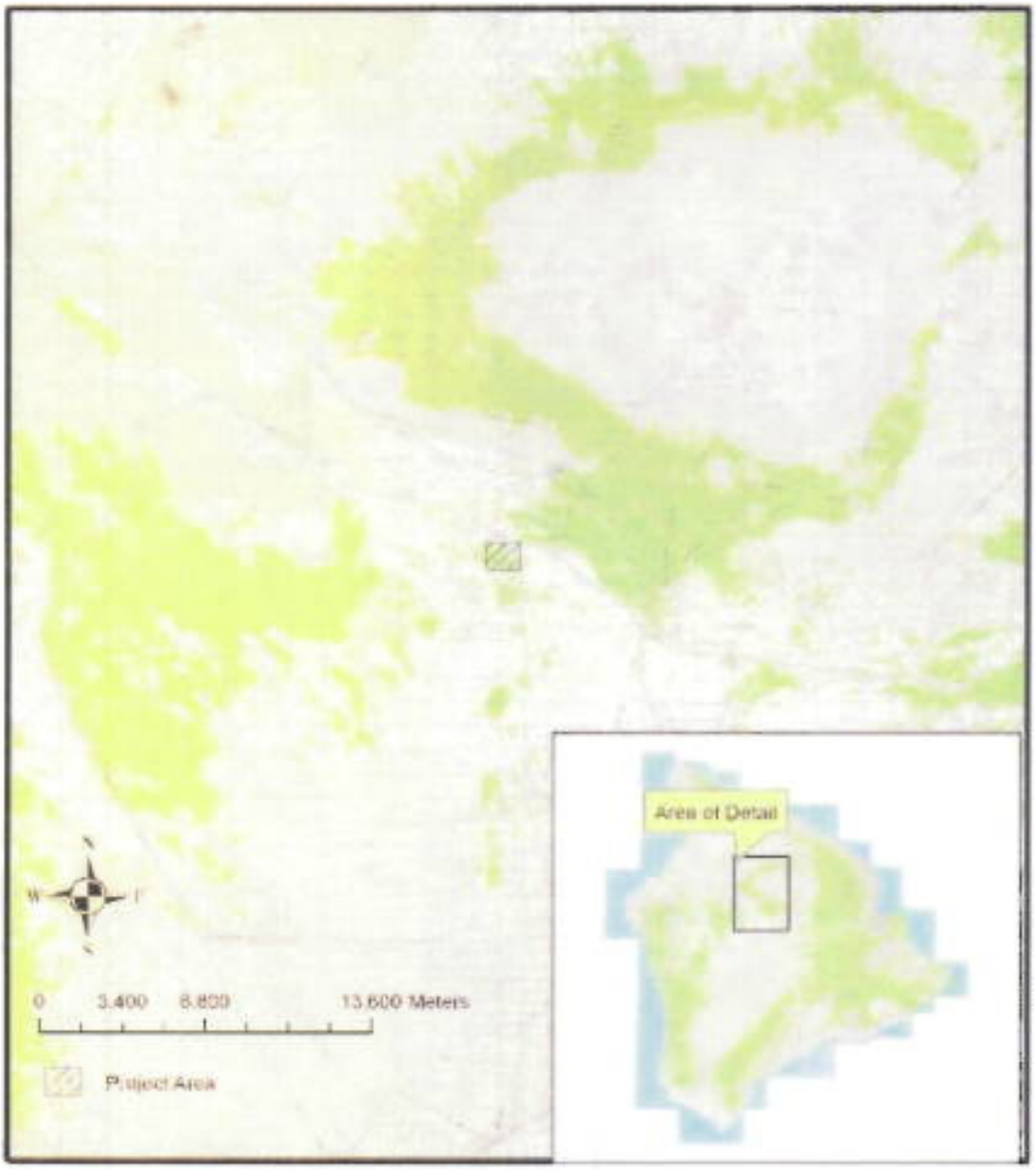


Figure 1. Project Location

during this time period as well (Maly & Maly 2005). Traditions and historical accounts indicate that the lands in this area to about 6000 feet elevation were covered in dense forests, and that the region was visited to gather forest plants, birds, and food. Travel to Mauna Kea was for worship, to gather stone for tools, bury family members, and to bury umbilical chords (Maly & Maly 2005). Golden plovers were said to be plentiful in the region. Figure 2 shows the area covered by previous archaeological surveys within a kilometer of the Site 23621 area, and Figure 3 depicts the distribution of known archaeological and historic sites within a kilometer of Site 23621.

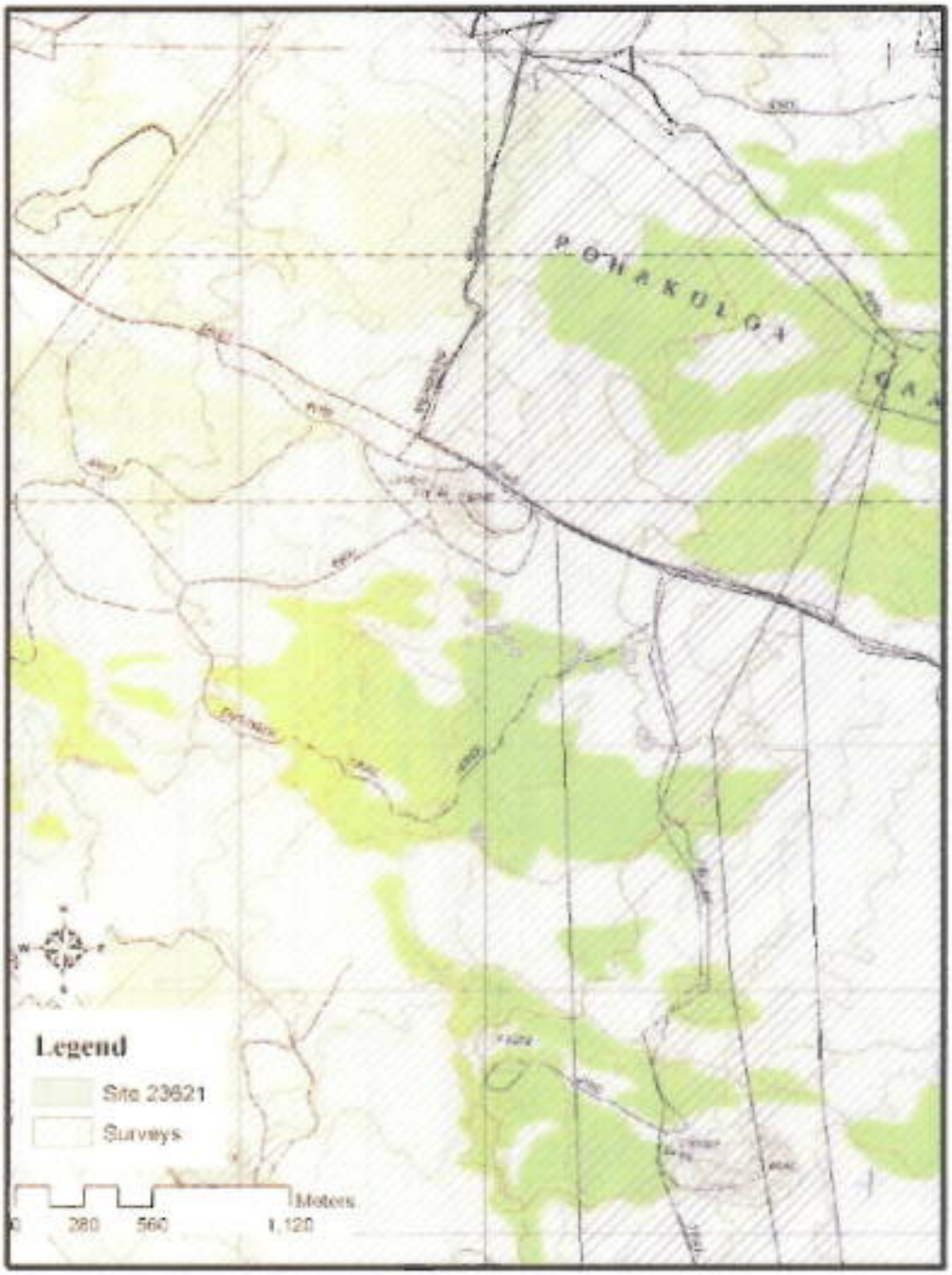


Figure 2 Archaeological Surveys in the area of Site 23621

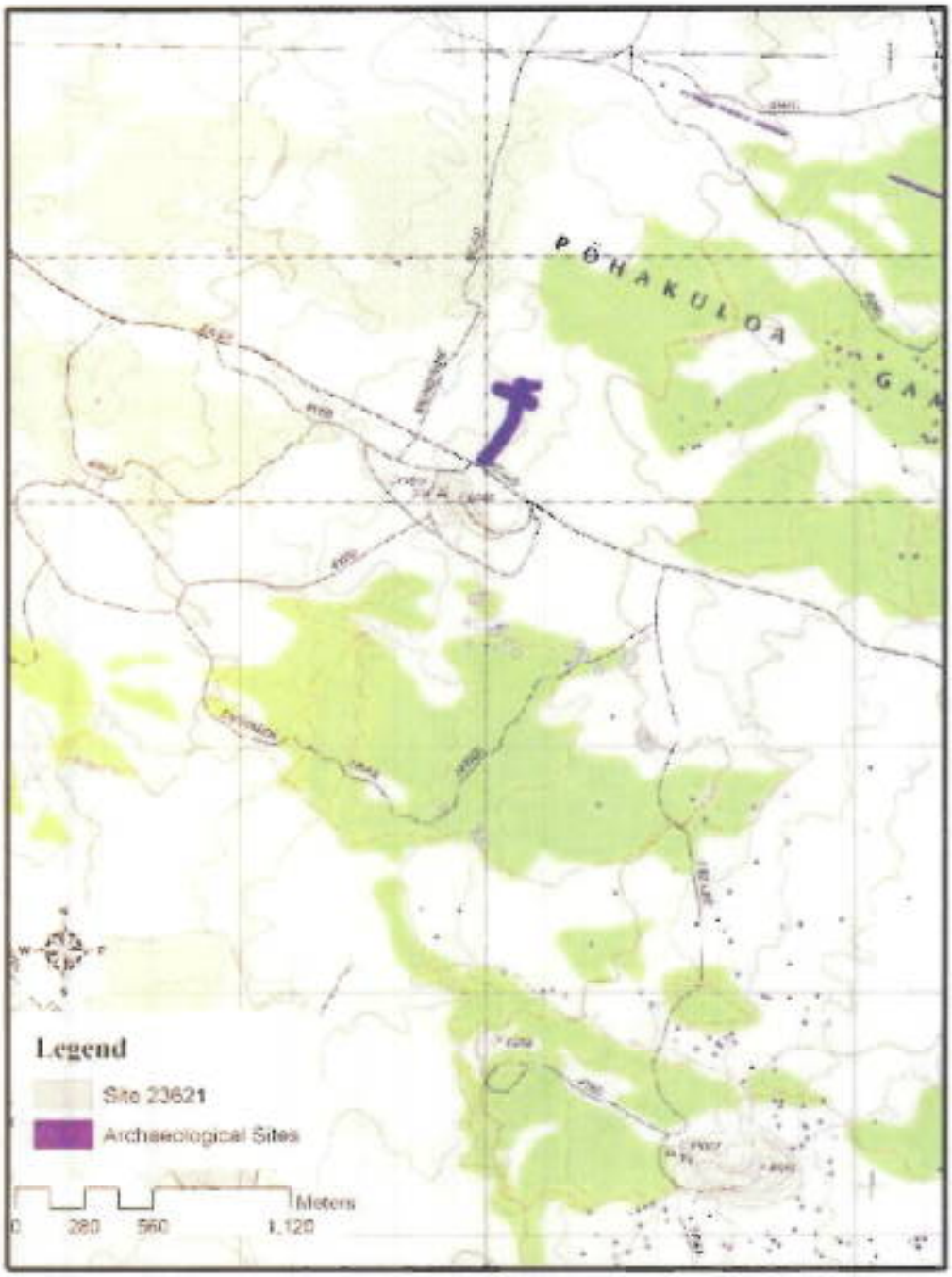


Figure 3 Archaeological Sites in the area of Site 23621

The Saddle region remained largely Crown lands throughout the 19th century, with leases let out. The cattle presented to Kamehameha I by Vancouver were set loose in the mountain areas. Nineteenth century accounts of travel through the region report encounters with cattle and bullock

hunters (collected in Maly & Maly 2005). Wild goats, sheep and dogs were also present in the Saddle region by the early 19th century. Bullock hunters built huts or shelters in the saddle region, and dug pits in which to catch the feral cattle (Maly & Maly 2005). A letter dated December 1834 relates Governor Kuakini's order that a road be constructed through the mountain region to facilitate travel from one side to the other; this appears to have been completed by 1850 (Maly & Maly 2005). Leases for pasture lands in the mountain area began in 1857, by which time much of the forest in the area had been decimated. The land devolved to the Territory and then State of Hawaii, and in 1956 the Pohakuloa Training Area was established by Presidential decree (Maly & Maly 2005).

Archaeological remains in the Saddle region that date to the pre-Contact era generally are indicative of short-term or sporadic, recurring use. Lava tubes were used as shelters and places to collect water. Lithic procurement sites are located throughout the saddle, both for basalt and volcanic glass. C-shaped shelters, U-shaped shelters, and platforms are also found in this region. The area was crossed by numerous trails, and remains of these are found across Pohakuloa Training Area. Physical indicators of trails include stepping stone trails, cleared areas in the 'a'ā, and cairns of ahu, particularly across pāhoehoe. Beyond the area of Pohakuloa Training Area proper, extensive basalt adze quarries and ceremonial sites are located on Mauna Kea. Historic sites from the ranching era are present in the Saddle region, including fence lines, fence posts, wire, and some ranching facilities.

Methods

This project consisted of a targeted assessment of features of a known site. The site, 50-10-31-23621 (shortened hereafter to 23621), is comprised of scattered clusters of excavated pits distributed over the entire project area. The site had been previously identified by Garcia and Associates (GANDA; Roberts, Robins & Buffum 2004; Robins & González 2006). However, field notes and site descriptions in the reports did not document clearly and conclusively the full extent of each cluster. It was therefore determined that additional fieldwork was required to provide more accurate information for management purposes. This project sought to confirm that all features identified were indeed excavated pits, to fully record the number of pits at each feature and therefore identify boundaries for each feature, and to collect information that could be used to develop site protection recommendations. The entire area delimited as site 23621 was not systematically surveyed during this project, nor was the entire area identified as the SDZ for 11T. Systematic survey had been the goal of previous projects referenced above. However, two new clusters of pits were identified during this project in transit between previously known clusters, and these were recorded during the current project.

The project to revisit the site features took place from January 30, 2007, through February 2, 2007. The principal investigator was Julie M. E. Taomia, Ph.D. The field crew consisted of three to four personnel, including Dr. Taomia, Mr. James A. Head, Mr. J. Cary Stine, and Ms. Kelly Leialoha Luscomb, accompanied by one UXO specialist, Mr. Ron Smith of DEI. The feature locations were relocated using UTM coordinates entered into a Trimble GeoXT.

Once clusters were located, photographs were taken of all pits, GPS readings were taken on each pit with the Trimble GeoXT, and pit locations were recorded using distance and direction from a datum point established with a Trimble ProXR. The Trimble Pro XR obtains sub-meter accuracy. Information about the pit such as measurements, flora, and location of rocks was collected based on previous studies of pits by PTA Cultural Resources staff, and some sketch maps (not to scale) were made. The entire area was examined to ensure that all pits were identified. The locale of each cluster was evaluated for potential damage due to military activities in the area, and natural features that could provide some protection. These natural protections are noted when

present, though they were evaluated on the basis of limited information regarding potential threats. Subsequent to the field work, lines were drawn around the pit clusters to establish feature boundaries. The GPS units were set to the North American Datum 1983. Collection times at each pit with the GeoXT were variable. Each datum was established with the ProXR collecting for 120 seconds. The resulting maps are provided below, showing the distribution of the excavated pits in each cluster. The photographs are included in Appendix B. Figure 4 depicts the Surface Danger Zone, or SDZ, for Range 11T in the area of Site 23621.

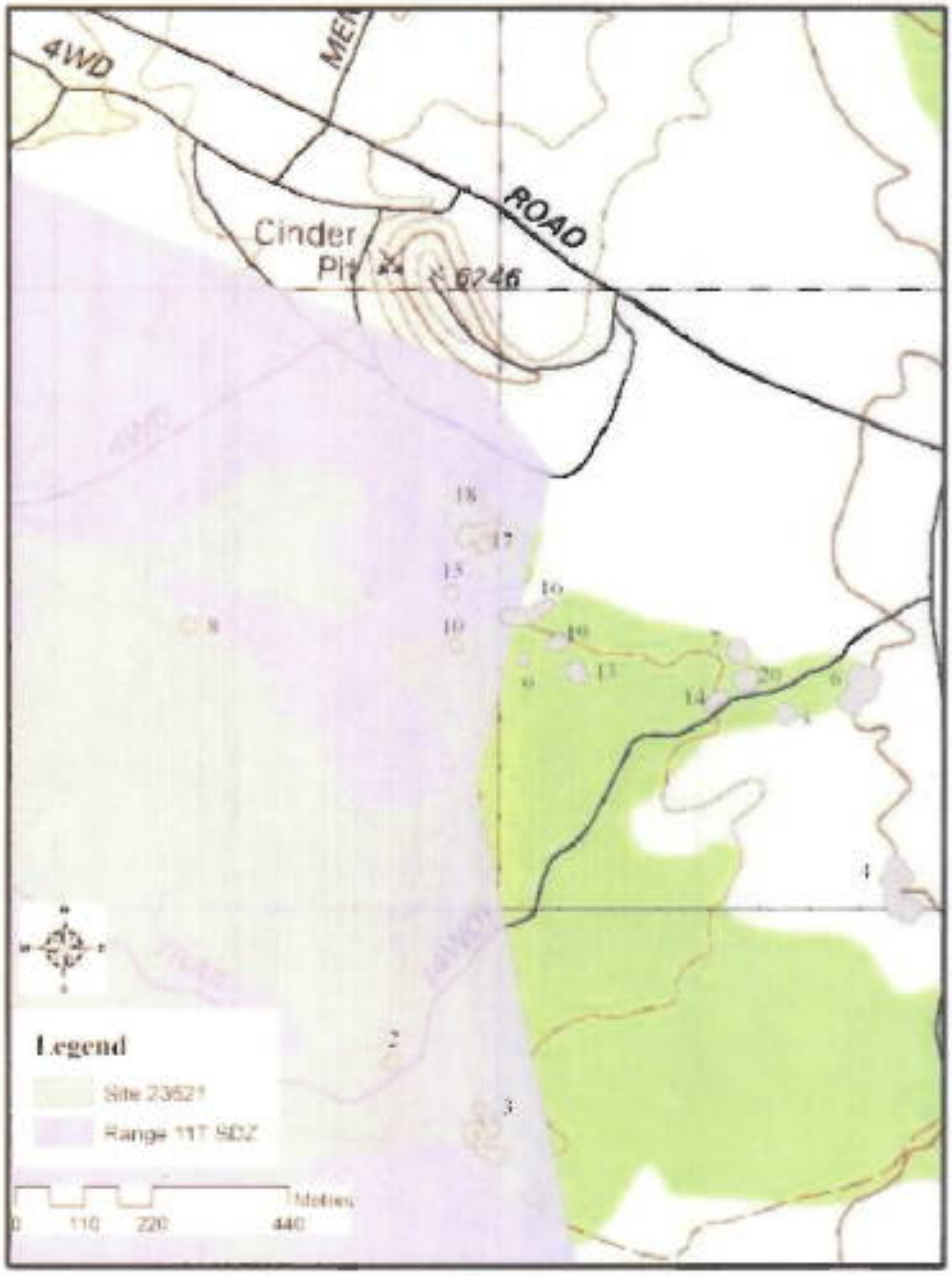


Figure 4 Range 117 Construction Area and Surface Danger Zone

Findings

GANDA field crew members originally identified the clusters as individual sites and assigned temporary site numbers. During post-field analysis it was determined that these clusters of

pits should be assigned to a single State site number, and feature designations were assigned to each of the clusters. The site tags placed at the features by GANDA carry the original temporary site numbers. Table 1 presents comparative information about the features of this site for the two projects, including the temporary GANDA numbers for correlation purposes.

Table 1. Site 23621 Features

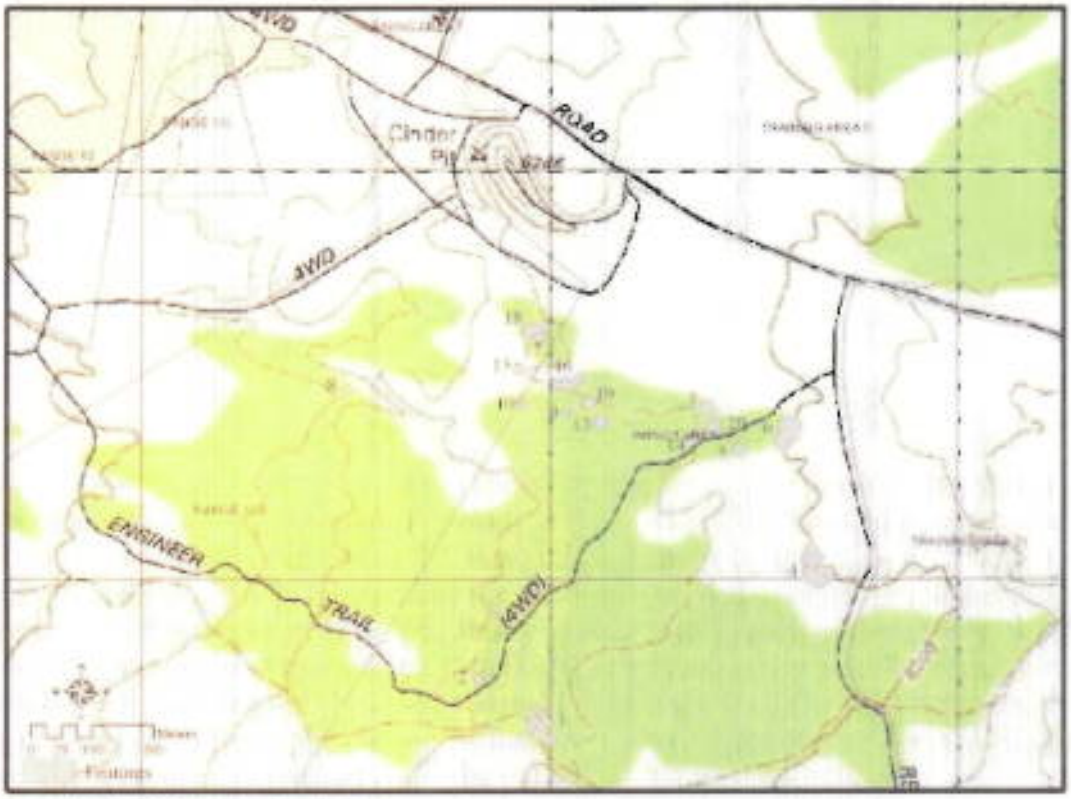
Original GANDA No.	Feature No. (From Robins & González 2006)	Number of Pits Identified at each Feature: GANDA field notes	GANDA Robins & González 2006	Current Project
688	18	3	3	7
687	17	4	4	2
682	15	1	2	2
678	8	3	3	7
658	2	10	10	4
659	3	5	5	14
679	10	2	2	2
681	9	3	3	3
677	12	3	1	n/a
683	13	10	10	9
686	16	2	2	16
684	14	7	7	11
685	7	2	10	4
666	5	4	5	3
669	6	10	4	26
664	4	10	10	12
T-020107-01	19	0		9
T-020207-01	20	0		5
Total:	At least	79	81	136

The number of pits identified at each cluster during the current project often varied from those previously recorded by GANDA. For many features, GANDA recorded an approximate number, and in the field notes indicated that there might be more by including a "+" after the number of pits at the feature. In later reports the numbers recorded became the numbers reported for that feature, with no mention of the possibility of more pits. In each of these cases, the current project identified more pits at the location than GANDA had originally described. The number of pits associated with each feature cluster also varied between the GANDA field notes and the reports. In several cases fewer pits were identified during the current project than GANDA had identified. These cases are discussed under the individual feature descriptions.

The excavated pits were found in pāhoehoe surfaces scattered throughout the project area. This area is characterized by interspersed ʻaʻā and pāhoehoe flows. The relative dominance of each type of flow varies considerably depending upon the location within the project area. In some cases, the excavated pits are located on a small patch of pāhoehoe surrounded on all sides by ʻaʻā. The area within Range 11T proper is dominated by ʻaʻā, while the area to the southeast is composed of more pāhoehoe flows. The pits are characteristically areas where the top layer of

pāhoehoe has been removed. The pieces that were removed are often found immediately adjacent to the edges of the pit. Most of the pits contain some sort of a void in some part of them, though areas were encountered during this project in which the underlying stratum was immediately beneath the broken portion. Some pits were encountered that appeared to have been re-filled after excavation. One characteristic of the excavated pits is that the loosed rock has been turned over so that what was naturally the bottom side of the surface facing downward is found adjacent to the pit area facing upward. The re-filled pits usually contain a combination of rocks facing bottom side upward and some with the original top surface facing upward. This distinguishes these re-filled pits from naturally collapsed tubes and bubbles in the pāhoehoe, which characteristically appear to simply have been crushed in place with no movement of the pieces, and all top surfaces still facing upward.

The table in Appendix A presents information collected during the project for each pit. One-hundred thirty-six (136) pits were identified during this project. The average length of the pits



was 1.49 m, with a range of 0.15 to 5.10 m. Average width was 0.9m, with a range of 0.1-2.35 m. Of the 90 pits for which depth was measured, the average was 0.31 m with a range of 0.05-0.60 m. Pits were excavated in lava blisters, lava tubes, and in the rings that formed as the lava pooled at the end of a stream. Numerous excavations were noted to have taken place along the edges of a flow, such that a portion of the "pit" was actually open and the floor of the pit actually contiguous with the adjacent ground surface. In several instances pits were excavated in different parts of the same lava tube, so that one could be seen from the other. The pits were generally of an irregular shape, tending to be circular or oval. The breakage most likely followed natural planes in the rock.

The pieces of rock from the break event were usually located both within and adjacent to the excavated pit. Very little sediment was deposited on the floors of the excavated pits, and where sediment was present it was generally very shallow. Most pits had lichen growth on some part of them, and many had other plants growing from within them. An overhang with a void beneath it was recorded for 95 of the excavated pits, while no evident overhang was recorded for 41 of the pits. Some of the pits exhibited possible evidence of battering, but in many cases it was difficult to separate this from natural weathering of the rock. A few pits had what appeared to be small pieces of the rock broken off in the process of battering. The pieces of rock associated with the pits were not examined for battering. No artifacts were noted in association with the excavated pits. The feature descriptions are presented here in the order in which the clusters were visited. Those pit clusters that fall within Range 11T or close to it are discussed first as these were visited during the first two days of the project. Photos of the pits can be found in Appendix B.

Feature 18 (GANDA #688) was originally reported by GANDA to have 3 excavated pits. Seven (7) excavated pits were identified over an area measuring 80 x 30 m (Figure 6). The site extends over a rise in elevation to the northeast, where some of the pits lie on top of the higher elevation. Four are located in a lower location that may provide protection from activities in the area. This feature falls within the area identified as Range 11T, and within the surface danger zone for the new firing exercises planned for the range (hereafter SDZ).

Feature 17 (GANDA #687) was recorded by GANDA to contain 4 pits. The cluster is adjacent to Feature 18, covering an area 9 x 5 m. Two (2) excavated pits were identified at this location, and both were at a lower elevation than those of site Feature 18. The entire area had a large amount of jumbled rock but none was clearly culturally modified. A natural depression was located to the northeast of the two excavated pits, but there was no evidence of human modification at this location. This feature falls within the area identified as Range 11T, and within the SDZ.

Given the close proximity of these two clusters (GANDA site tags were found in one pit in each cluster), it was not clear which pits other than those with the site tags in them were associated with which cluster. Regardless, the total number of excavated pits for these two features combined was seven according to GANDA, and nine were recorded between these two features by this project.